



US 20210350237A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2021/0350237 A1**  
(43) **Pub. Date:** **Nov. 11, 2021**(54) **SYSTEM AND METHOD FOR USING  
SIGNAL WAVEFORM ANALYSIS FOR  
DETECTING A CHANGE IN A WIRED  
NETWORK**(71) Applicant: **Arilou Information Security  
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Nahariya (IL)(21) Appl. No.: **17/359,806**(22) Filed: **Jun. 28, 2021****Related U.S. Application Data**(63) Continuation of application No. 16/464,307, filed on  
May 28, 2019, now Pat. No. 11,055,615, filed as  
application No. PCT/IL2017/051259 on Nov. 18,  
2017.(60) Provisional application No. 62/430,988, filed on Dec.  
7, 2016.**Publication Classification**(51) **Int. Cl.**  
**G06N 3/08** (2006.01)  
**H04L 29/06** (2006.01)  
(52) **U.S. Cl.**  
CPC ..... **G06N 3/08** (2013.01); **H04L 63/1416**  
(2013.01)(57) **ABSTRACT**

An analyzer for monitoring a configuration of a wired network medium that is used for communication between multiple devices. The configuration change includes an additional device tapping to the medium for eavesdropping, or the substituting one of the devices. The analyzer is connected to the medium for receiving, storing, and analyzing waveforms of the physical-layer signals propagated over the medium. The analysis includes comparing the received signals to reference signals, and notifying upon detecting a difference according to pre-set criteria. The analysis may be time or frequency-domain based, and may use a feed-forward Artificial Neural Network (ANN). The wired network may be an automotive or in-vehicle network, PAN, LAN, MAN, or WAN, may use balanced or unbalanced signaling, and may be configured as point-to-point or multi-point topology. The analyzer may be connected at an end of the medium, and may be integrated with one of the devices.

